भारतीय मानक
Indian Standard

IS 16604 : 2017
(Superseding IS 9238 : 1979)
(Reaffirmed 2022)

स्वचल वाहन — वाहनों के फुट नियंत्रणों की व्यवस्था — विशिष्टि

Automotive Vehicles — Arrangement of Foot Controls of Vehicles — Specification

ICS 43.040.30

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भारतीय मानक ब्यूरो
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June 2017 **Price Group 3**

Automotive Body, Chassis, Accessories, Garage Equipment, Springs and Suspension Systems Sectional Committee, TED 06

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Body, Chassis, Accessories, Garage Equipment, Springs and Suspension Systems Sectional Committee had been approved by the Transport Engineering Division Council.

This standard supersedes IS 9238 : 1979 'Lateral spacing of foot controls for passenger cars'.

Foot controls in a vehicle do not require the driver to see them while driving. The driver needs to be familiar with the foot controls of different makes of vehicles. In this regard the arrangement of the foot controls is important for safety.

While preparing this standard considerable assistance has been derived from the AIS 035 'Automotive vehicles — The arrangement of foot controls of vehicles — Specification' and ECE R 35 (Revision 1, Erratum) 'Uniform provisions concerning the approval of vehicles with regard to the Arrangement of Foot Controls'.

The composition of Committee responsible for the formulation of this standard is given in Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

AUTOMOTIVE VEHICLES — ARRANGEMENT OF FOOT CONTROLS OF VEHICLES — SPECIFICATION

1 SCOPE

This standard applies to vehicles of category M1 with regard to the arrangement and mode of operation of the foot controls.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
13749 : 2009	Automotive vehicles — Procedure for determining the "H" point and the torso angle for 50th percentile adult male in seating positions of motor vehicles
14272 : 2011	Automotive vehicles — Types — Terminology

3 DEFINITIONS

For the purpose of this standard the following definitions shall apply.

3.1 Approval of a Vehicle — The approval of a vehicle type with regard to the foot controls as specified in clause I.

3.2 Vehicles of Category M1 — A motor vehicle as defined in IS 14272.

3.3 Vehicle Type — A category of motor vehicles which do not differ in respect of the structure and internal arrangements which may affect the location and operation of the foot controls.

3.4 Accelerator Pedal — A foot control by which the engine power output can be varied.

3.5 Service-Brake Pedal — A foot control by which the service-braking device can be operated.

3.6 Clutch Pedal — Means the foot control of the device designed to engage the engine with or disengage it from the transmission and the road wheels.

3.7 Transverse Plane — A plane perpendicular to the median longitudinal plane of the vehicle.

3.8 Longitudinal Plane — A plane parallel to the median longitudinal plane of the vehicle.

3.9 Reference Plane '*P*' (*see* Fig.1) — Transverse plane passing through point '*A*' and perpendicular to the orthogonal projection of the line joining point '*R*' to point '*A*' when projection is taken on a longitudinal plane passing through the '*R*' point.

3.10 '*A*' — It is a point on the surface of the accelerator pedal 200 mm from point '*B*'.

3.11 '*B*' — The fixed point on the vehicle corresponding to the heel point, as established by the vehicle manufacturer.

3.12 Walls — Fixed structural members (for example transmission tunnel; wheel arches; side trim panels).

4 REQUIREMENTS

4.1 The foot controls shall be arranged in the following order from left to right, as observed from the driver's sear, clutch pedal if any, service-brake pedal, accelerator pedals.

4.2 It shall be possible to place the left foot normally in a position of rest on the floor surface or foot rest such that it is not trapped by the pedals.

4.3 It shall be possible to actuate any pedal over its full travel without inadvertently operating floor-switches or other foot controls.

4.4 The seating reference point '*R*' shall be measured by the procedure for determining the '*H*' point and actual torso angle for seating position in motor vehicles as per IS 13749. The three dimensional reference system shall be as given in Annex A.

4.5 The distance shown as '*E*' in Fig. 3 and Fig. 4 of Annex B, between the contour points of the orthogonal projections on to plane '*P*' of the accelerator-pedal and service-brake-pedal bearing surfaces shall be < 100 mm and > 50 mm.

4.6 The distance '*F*' in Fig. 4 between the orthogonal projections of the service-brake-pedal and the clutch-pedal bearing surfaces on to the reference plane '*P*' shall be > 50 mm.

4.7 The distance '*G*' in Fig. 4, between the contour points of the orthogonal projection of the clutch pedal on the plane '*P*' and the intersection of the nearest wall with plane '*P*' shall be > 50 mm.

4.8 The distances, respectively shown as '*H*' and '*J*' in Fig. 3 and Fig. 4, between the projection of the service-brake pedal on to the reference plane '*P*' and the intersection of each of the walls with that plane shall be > 130 mm to the right and > 160 mm to the left for vehicles with three pedals (*see* Fig. 4) and > 130 mm to the right and > 120 mm to the left for vehicles with two pedals (*see* Fig. 3).

5 TECHNICAL INFORMATION TO BE SUBMITTED BY THE VEHICLE MANUFACTURER

5.1 The application for approval of a vehicle type with regard to the arrangement of foot controls shall be submitted by the vehicle manufacturer.

5.2 It shall be accompanied by the following documents in triplicate, and by the following particulars.

5.2.1 Drawings, on an appropriate scale and in sufficient detail, of the parts of the structure considered to be referred to by the requirements of this standard.

5.3 A vehicle representative of the type to be approved shall be submitted to the test agency responsible for conducting the approval tests.

5.4 Vehicle manufacturer shall submit reference data concerning seating positions of driver as per Annex C to test agency.

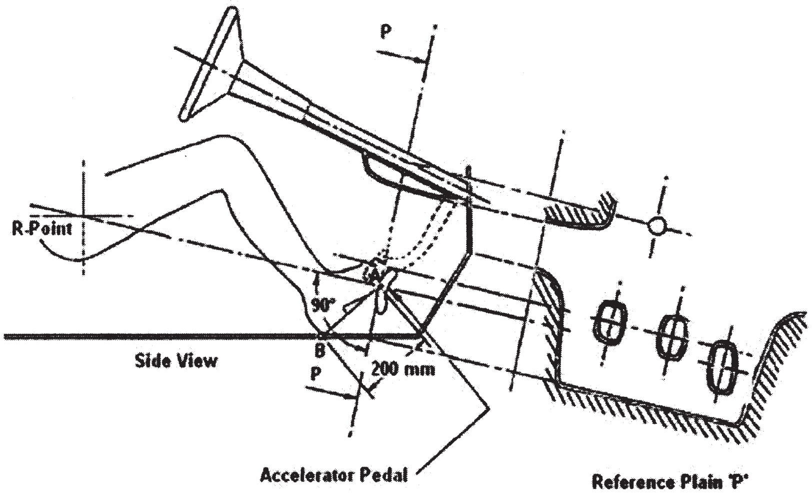


FIG. 1 ARRANGEMENT OF FOOT CONTROLS

ANNEX A

(*Clause* 4.4)

THREE DIMENSIONAL REFERENCE SYSTEM

A-1 The three dimensional reference system is defined by three orthogonal planes established by the vehicle manufacturer (*see* Fig. 2).

A-2 The vehicle measuring attitude is established by positioning the vehicle on the supporting surface such that the coordinates of the fiducial marks correspond to the values indicated by the manufacturer.

A-3 The coordinates of the '*R*' point and the '*H*' point are established in relation to the fiducial marks defined by the vehicle manufacturer.

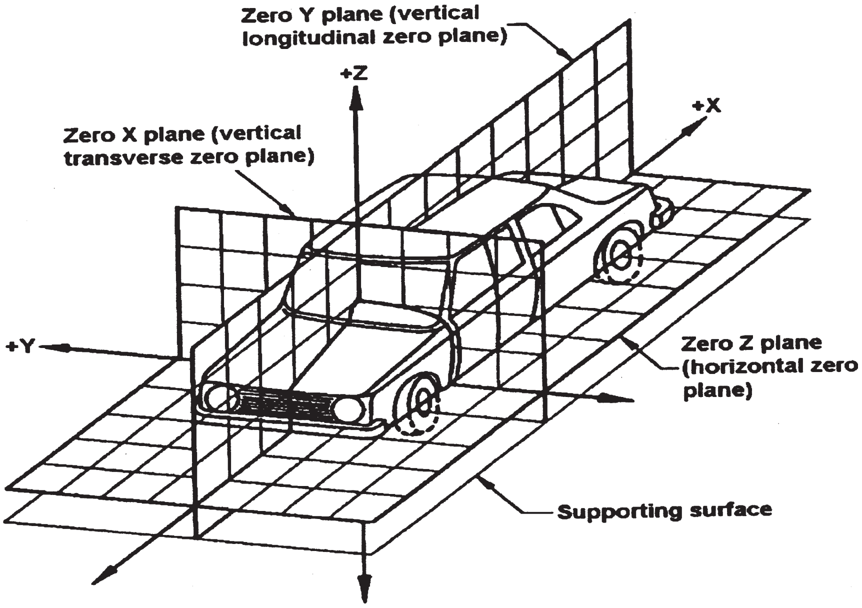
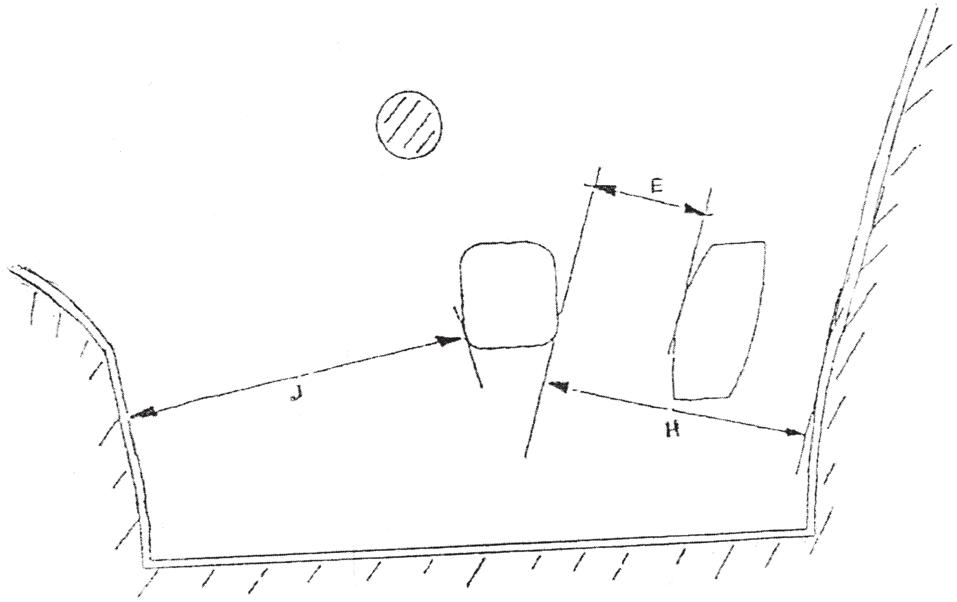

Zero Y plane (vertical longitudinal zero plane)
+Z
+X
Zero X plane (vertical transverse zero plane)
+Y
Zero Z plane (horizontal zero plane)
Supporting surface

FIG. 2 THREE DIMENSIONAL REFERENCE SYSTEM

ANNEX B

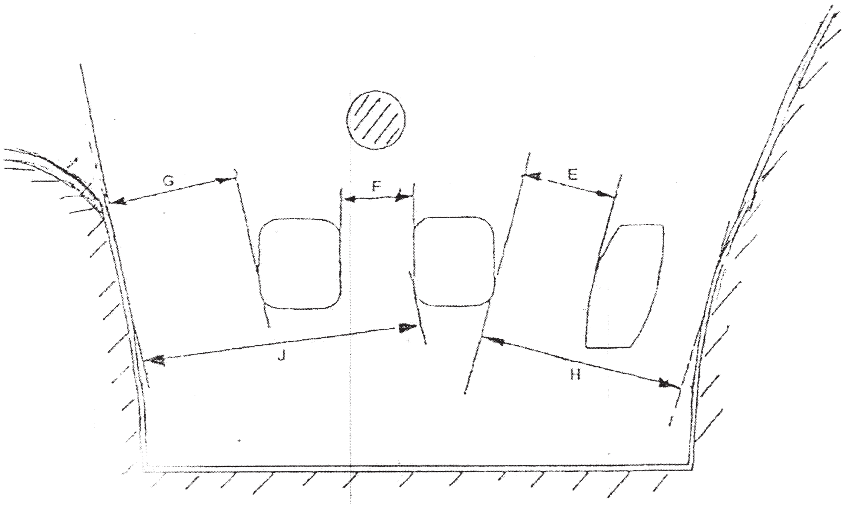
(*Clauses* 4.5, 4.6, 4.7 *and* 4.8)

ARRANGEMENT OF FOOT CONTROLS



	Maximum, mm	*Minimum*, mm
E	100	50
H	—	130
J	—	120

FIG. 3 TWO PEDALS — AUTOMATIC TRANSMISSION



	Maximum, mm	*Minimum*, mm
E	100	50
F	—	50
G	—	50
H	—	130
J	—	160

FIG. 4 THREE PEDALS — CONVENTIONAL TRANSMISSION

ANNEX C

(*Clause* 5.4)

REFERENCE DATA CONCERNING SEATING POSITIONS

C-1 CODING OF REFERENCE DATA

Reference data are listed consecutively for each seating position. Seating positions are identified by a two-digit code. The first digit is an Arabic numeral and designates the row of seats, counting from the front to the rear of the vehicle. The second digit is capital letter which designates the location of the seating position in a row, as viewed in the direction of forward motion of the vehicle, the following letters shall be used:

L = left
C = centre
R = right

C-2 DESCRIPTION OF VEHICLES MEASURING ATTITUDE

C-2.1 Coordinates of Fiducial Marks

X…………………………….
Y…………………………….
Z…………………………….

C-3 LIST OF REFERENCE DATA

C-3.1 Seating Position

C-3.1.1 *Coordinates of 'R' Point*

X…………………………….
Y…………………………….
Z…………………………….

C-3.1.2 *Design Torso Angle*

C-3.1.3 *Specifications for Seat Adjustment**

Horizontal …………………
Vertical …………………….
Angular …………………….
Torso Angle ………………..

NOTE — List reference data for further seating positions under **3.2**, **3.3**, etc.

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*strike out what does not apply.

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Automotive Body, Chassis, Accessories, Garage Equipment, Springs and Suspension Systems Sectional Committee, TED 06

Organization	*Representative(s)*
Automotive Research Association of India, Pune	Shri A. V. Mannikar (***Chairman***)
Asahi India Glass Ltd, Dist. Rewari	Shri Mirza Asif Beg
Ashok Leyland Ltd, Chennai	Shri Alfred Nixon Mendez Shri S. Arun (*Alternate*)
Association of State Road Transport Undertakings, New Delhi	Director (Technical)
Autoliv IFB India Ltd, Bangalore	Shri V. Raghu Shri S. Rangarajan (*Alternate*)
Automotive Component Manufacturers Association, New Delhi	Shri Uday Harite Shri Jitender Rana (*Alternate*)
Bajaj Auto Ltd, Pune	Shri R. Narasimhan Shri A. V. Kumbhar (*Alternate*)
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Central Farm Machinery Training & Testing Institute (CFMTTI), P.O. Budni (M.P.)	Shri C. R. Lohi Shri C. V. Chimote (*Alternate*)
Controllerate of Quality Assurance (Vehicles) Ahmednagar	Joint Controller (QAD-B) Deputy Controller (QAD-B) (*Alternate*)
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Kum. Rajshree Parmar Memorial Foundation, Pune	Shri Chandmal M. Parmar
Maharashtra State Road Transport Corporation, Mumbai	Shri Vasant Baburao Gaidhani Shri R. M. Paunikar (*Alternate*)
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Ministry of Road Transport & Highways, New Delhi	Director Road Transport Shrimati Dharkat R. Luikang (*Alternate*)
Transport Commissioner Office, Mumbai	Shri P. B. Jadhav
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Ruby Bus Pvt Ltd, Mumbai	Shri Pankaj D. Kapashi Shri V. M. Bhise (*Alternate*)
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Society of Indian Automobile Manufactures (SIAM), New Dehli	Shri K .K. Gandhi Shri Amit Kumar (*Alternate*)

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Member Secretary
Shri D. K. Singla
Scientist 'D' (TED), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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AMENDMENT NO. 1 MARCH 2021

TO

IS 16604 : 2017 AUTOMOTIVE VEHICLES — ARRANGEMENT OF FOOT CONTROLS OF VEHICLES — SPECIFICATION

(*Page* 1, *clause* **1**) — Substitute the following for the existing clause:

‘1 SCOPE

This standard applies to vehicles of category M1 and L7-M with regard to the arrangement and mode of operation of the foot controls.’

(*Page* 1, *clause* **3.12**) — Add the following new clause at the end of the clause:

‘**3.13 Vehicles of category L7-M** — A motor vehicle as defined in IS 14272.’

(*Page* 1, *clause* **4.1**) – Substitute the following for the existing clause:

‘**4.1** The foot controls shall be arranged in the following order from left to right, as observed from the driver’s seat, clutch pedal if any, service-brake pedal, accelerator pedals.’

(*Page* 1, *clause* **4.5**) – Substitute the following for the existing clause:

‘**4.5** The distance shown as ‘E’ in Fig. 3 and Fig. 4 of Annex B, between the contour points of the orthogonal projections on to plane ‘P’ of the accelerator-pedal and service-brake-pedal bearing surfaces shall be ≤ 100 mm and ≥ 50 mm.’

(*Page* 1, *clause* **4.6**) – Substitute the following for the existing clause:

‘**4.6** The distance ‘F’ in Fig. 4 between the orthogonal projections of the service-brake-pedal and the clutch-pedal bearing surfaces on to the reference plane ‘P’ shall be ≥ 50 mm.’

(*Page* 1, *clause* **4.7**) – Substitute the following for the existing clause:

‘**4.7** The distance ‘G’ in Fig. 4, between the contour points of the orthogonal projection of the clutch pedal on the plane ‘P’ and the intersection of the nearest wall with plane ‘P’ shall be ≥ 50 mm.’

(*Page* 2, *clause* **4.8**) – Substitute the following for the existing clause:

‘**4.8** The distances, respectively shown as ‘H’ and ‘J’ in Fig. 3 and Fig. 4, between the projection of the service-brake pedal on to the reference plane ‘P’ and the intersection of each of the walls with that plane shall be ≥ 130 mm to the right and ≥ 160 mm to the left for vehicles with three pedals (*see* Fig. 4) and ≥ 130 mm to the right and ≥ 120 mm to the left for vehicles with two pedals (*see* Fig. 3).’

(TED 06)

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